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SPECIFICATION AND REMUNERATION OF FOREIGN KNOW-HOW [1/]

Guidelines for Licensees in Developing Countries

prepared by

the Secretariat of UNIDO

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Preface

Licensing agreements for the domestic manufacture of modern engineering products in industrially developing countries are gaining in significance. For the licensor they constitute a middle road between investment and exporting, since they are less risky than owning and managing factories abroad, but they involve more commitment than mere exporting. For the licensee, however, there is usually less choice; the growing indebtedness of many developing countries makes mere importing less and less feasible, and the numerous technical and economic benefits to be obtained from orderly acquisition of know-how through licensing agreements clearly outweigh other alternatives, especially independent deployment by copying foreign products. The growing sophistication of many engineering products - especially of new material and manufacturing methods - makes unaided copying increasingly different. Moreover, the growing technology gap calls for a leap-frogging of earlier stages, and usually this can only be achieved with the support of experienced licensors.

If, in the past, licensing agreements have not always led to the desired results, this has been due mainly to a lack of knowledge on either side, with regard to their design and handling. Most licensees in developing countries - and also many licensors in advanced countries - have little practical experience in this respect. Various manuals for licensing agreements have been published by manufacturers' associations in industrially advanced countries, mainly to protect the non-patentable know-how of their members against undue exploitation. Legal expertise frequently plays a predominant role in these publications, whereas engineering and financial considerations are given less attention. The author is not aware of publications having been issued with the primary aim to protect the less experienced licensee in developing countries. Further, it would seem desirable to give more emphasis to the productive engineering and financial aspects of licensing agreements, instead of accentuating legal considerations, which are often merely restrictive.

The intention in the present paper is to reduce this lacuna, by stressing the main features of design and manufacturing know-how, and by indicating ways and means of transferring the same in a systematical manner at minimum expense to both partners. The first part provides an

analysis of technological know-how and brings out the significant elements by way of a model specification, in order to facilitate the licensor's task of compiling essential know-how and its comprehensive transfer to the licensee. A schedule for the systematic cross-checking of licensing documents concludes this chapter.

The remuneration of foreign know-how is subsequently analysed, with a view to explaining various methods of compensation. It would be more difficult to establish standard rules for this purpose, because licensing agreements for new ventures as well as for expanding undertakings in developing countries involve numerous major business decisions. Circumstances may differ widely from case to case; varying substantially in respect to products and markets as well as to taxes and incentives, they create different preconditions for prospects and risks. Hence the frequent wish of less experienced licensees in developing countries, to cover the commercial and financial aspects by way of standard agreements, cannot easily be fulfilled. The purpose of the present paper is not so much to enlarge on preconceived standard rules in this respect but, rather, to indicate the principles to be observed when envisaging a licence agreement and to warn against possible pitfalls.

The observations and suggestions made by the author in the present paper do not imply the expression of any opinion whatsoever on the part of UNIDO, nor do they necessarily reflect the views of the United Nations.

1) Introduction

1.1 Complexity of licensing agreements

An international licensing agreement for the sale and purchase of technical know-how constitutes a complexity of legal, commercial, financial and, last but not least, technical considerations. Usually several experts are required to draft, negotiate and conclude such an agreement. Engineers are needed to specify the technical requirements; while they are occasionally familiar also with the commercial problems involved, they more often than not know little about the financial and legal implications. Commercial experts are required to project future sales of the products to be manufactured under the agreement and to stake out potential markets for them. Accountants will be aware of the

financial consequences arising from the agreement, but their capability to formulate or evaluate any technical issues is often very limited. Finally a legal expert must cast the various considerations into a negotiable draft, and he may require the services of a translator to formulate the finer points in a foreign language. In due course the chief executive officers, who have to bear the responsibility for the whole venture, will add or delete certain points or modify the drafts according to their own experience and judgement.

Many new undertakings in industrially developing countries, as well as some existing companies of medium size, will not have these various experts at their disposal; they may have to decide on the major implications of a licensing agreement without the aid of specialized advisors. Hardly any literature exists which offers guidance to the less experienced licensee on critical questions and elucidates the problems from his angle. As a result, many of the international agreements lack balance, because the licensors in developed countries usually have more experience and expert assistance.

1.2 The three components of know-how

The technical and scientific know-how embodied in sophisticated engineering products, resulting from research, development, industrial experience and innovations, comprises in principle three major components. The manifest part is the exterior design with its visible features and functions; in short, the design know-how. But more important for domestic production in industrially developing countries is the manufacturing know-how entailed in the actual production processes of the foreign manufacture. Equally valuable may be the organizational advice which the licensor sometimes supplies along with the design and manufacturing know-how.

Design know-how for engineering products can usually be transferred without much difficulties in the form of drawings and material specifications. But the transfer of their manufacturing know-how involves numerous problems, because only part of it can be economically and intelligently conveyed by way of documents. Detailed operation layouts, indicating in the correct sequence of individual operations to be performed the machines, manufacturing aids and measuring instruments, are

the principal means for transferring manufacturing know-how. Moreover, specific procedures for material treatment - particularly the heat treatment of critical steel components - and most assembly operations can be described to a large extent in drawings, graphs and instructions.

However, a substantial part of the manufacturing know-how cannot be described this way in an economical manner; it is preferably passed on through oral instructions and practical demonstrations, by selected experts, assigned by the licensor to the new factory to train their less experienced counterparts in the skills of a specific process or trade. An equally informative method is to train and educate suitably selected personnel delegated by the licensee to foreign factories, preferably in the actual manufacturing processes at the licensor's works.

This non-describable part of manufacturing know-how - which also will have been developed by the licensor over the years, sometimes through systematic research and development but more often by trial and error on the shop floor - forms an essential element of the entire production process and must necessarily be passed on to the licensee, if the economic manufacture of a foreign product is to be successfully established in a new factory of a developing country.

The third component of know-how usually transferred under a licensing agreement, is the organizational advice rendered by the licensor. Numerous advisory services are frequently offered by the licensor ranging from suitable layouts for a new factory and the salient features of an adequate internal organization to assistance in marketing the products; they may even include the use of the licensor's trade name for easier acceptance of the products in the new domestic market. The 'technology gap' which it is intended to lessen by acquiring foreign know-how is in many respects a 'management gap'; better utilization of existing equipment and resources in employing modern management methods can considerably increase productivity and quality in the licensee's factory, without the addition of technological know-how. Thus, the value of the organizational advice is frequently equal to, if not higher than, the design and manufacturing know-how itself. The compounding benefits arising from an agreement which covers both aspects will probably constitute a manifold increase in the value of the total know-how, and not merely another asset.

2) Specification of know-how

2.1 Problems of know-how specification

The effect of many a licensing agreement has been impaired by inadequate specification of know-how, especially of manufacturing know-how. This was due to a lack not so much of goodwill or effort but usually of experience on the part of the licensee and sometimes also of the licensor. Those embarking on new ventures in developing countries often do not know how to specify their requirements in advance, and established manufacturers abroad are not always aware of the future needs of their less experienced partners. Production at the licensor's factories has become more or less a routine, with no problem any longer arising; whereas for the new manufacturer even minor details may prove problematic and, if not provided for in the licensing documents, may give rise to delays and deficiencies.

There is of course a limit to the practicable degree of detail in licensing documents. On average, about 60 - 70 percent of the total manufacturing know-how required by a less experienced licensee in a developing country, for machine tools, or air compressors, or electric equipment can be described in the form of drawings, operation layouts, instructions, graphs and procedures. However, these documents have to be established by the licensor in a systematic manner so as to compriss most of the available data and to avoid omission of elements that may be essential to the licensee.

Frequently the documents required for the transfer of know-how are not readily available to the licensor and will have to be especially established. Here, also, the required know-how should be specified in such a manner, that the compilation of data will be not only economical for the licensor, but also of optimum value for the licensee.

It is not possible to establish one general specification applicable to all engineering products. However, the model specification given below, more or less tailored for the licensed manufacture of machine tools and allied machinery, comprises many principles which are valid also for other engineering products.

2.2 Specification of design know-how

The principal design know-how of a machine is normally passed on by way of engineering drawings, which in various external and sectional projections illustrate all the shapes and dimensions of the machine and its components. A comprehensive specification of this part of the know-how might read as follows:

(1) One complete set of up-to-date, correct and legibly reproducible manufacturing drawings of all components made by the licensor or subcontracted to his design, complete lists of parts of all subassemblies, in both metric measurement and English wording, together with one set of white prints thereof, for the machine and all standard and special equipment pertaining thereto. All drawings to be on ISO standard forms, A-4 size or larger, with title blocks providing for alteration service, list of parts and raw material dimensions.

(2) One complete set of up-to-date, correct and legibly reproducible factory standard sheets, as well as one printed set of all other engineering standards relevant to the manufacture of the machine, its standard and special equipment and the manufacturing aids mentioned under specification (5) below

Correctness of drawings

This specification entails a number of significant details which are essential for the orderly transfer of know-how. The master drawings available with the design office of the licensor may not be up-to-date and entirely correct; the workshop may have rectified mistakes and amended details, without having reported such alterations to the design office. Such changes, however, are extremely important for the licensee, if he is to avoid the same mistakes and the trouble of finding more practicable solutions which the licensor's experienced workshops will have already provided. The wording "correct" and "up-to-date", therefore, will prompt the licensor to amend his master drawings accordingly; he would doubtless be in fault if, for example wrong components were manufactured by the licensee's workshops owing to incorrect or obsolete drawings supplied by him.

Reproducibility of drawings

The other qualification specified for the drawings, i.e. "legibly reproducible", would appear to be an obvious technicality. However, shortcomings in this respect have been a frequent cause for initial dissatisfaction and even for subsequent legal disputes between the parties. Reproducible, i.e. transparent prints are commonly made by duplicating the licensor's master drawings; as a rule, these prints are already less legible than the originals. The subsequent reproduction of prints from transparent 'inter-originals' by the licensee for his own planning and production purposes is even less legible; and consequently the small figures and symbols relating to dimensions or tolerances are often barely decipherable. The errors likely to arise from this deficiency have sometimes proved to be very costly. If, for example, intricate components are made to wrongly read dimensions, or misinterpreted tolerances result in imperfect fits and limits, then, naturally, the question will arise: Who pays for the damage? Rightly or wrongly, the licensor will refute any responsibility, and unpleasant arguments will ensue, poisoning an agreement which began in an atmosphere of goodwill. Therefore, the licensee would be prudent to insist not only on supply of legibly reproducible drawings, but also on one complete set of white prints made from the licensor's master drawings, to be filed solely for reference purposes. Under no circumstances should these reference prints be used for planning purposes or issued to the workshop for actual production.

Size and shape of drawings

The size and shape of drawings to be supplied under international agreements should be in accordance with standardized ISO measurements, the minimum size to be A4 (297 x 210 mm). Smaller or irregular shapes, as well as the occasional habit of combining drawings of various parts on one larger sheet, often impede the transfer of know-how. Also the orderly registration and filing of master drawings and prints is defeated, if paper-saving formats are used. The title-blocks providing for a systematic alteration service, a list of parts and for raw material dimensions are essential for production-planning purposes and, therefore, must be specified and supplied.

Standard parts

These manufacturing drawings alone would not suffice to specify all the components of a machine, many of which are standard or purchased parts not made by the licensor from his own drawings. A full enumeration of the required components is, therefore, usually provided only in the lists of parts. These lists must comprise all components, including standard and purchased parts required for all complete subassemblies of the machine. The standard parts indicated therein must be further defined in detail, by supplying either reproducible factory standard sheets or prints of ISO or national standards of the licensor, as specified under (2), above.

Purchased parts

Regarding non-standardized components purchased by the licensor from specialized manufacturers in his country - e.g. special pumps or electric instruments - detailed specification is feasible only in so far as the makers give this information in their catalogues and leaflets.[1] He should, therefore, provide:

(3) One complete set of up-to-date catalogues, leaflets, printed price lists and discount schedules of all non-standardized components purchased by the licensor, pertaining to the machine and its standard and special equipment.

Thus the licensee may purchase the components directly from the makers, if he so prefers.

Translation of documents

The proposed specifications in regard to the language as well as to the system of measurements to be applied in the licensing documents are, naturally, only examples; they must be adapted to the actual conditions prevailing in the countries or factories of the licensor and the licensee. In spite of all the care taken by the licensor's translators, there is always the danger that the translation into another language might give rise to inaccuracies as well as outright errors. Minor discrepancies in the terminology and nomenclature of different languages make misinterpretations unavoidable; moreover, human errors

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[1] If the licensee wishes to take up domestic manufacture of such components, separate licensing agreements will have to be concluded with the respective suppliers.

can easily occur and also, a good translation is costly. Therefore, if translations can be avoided, it will be better for both parties.[1] If not, copies of all principal documents in the original language should also be passed on to the licensee, for ready reference in case of doubt. Further, translations of all verbal notes on drawings should be added to the original text on the drawings, space permitting.

Systems of measurement

In regard to the system of measurements to be applied, considerable difficulties will arise if the original system differs from that desired by the licensee. Intelligent conversion into the metric system of a design based on the foot-pound system and vice versa is feasible, but it involves numerous problems which cannot be discussed in detail in this paper.[2] If goes without saying that the system to be applied in the licensing documents must be specified in the agreement.

2.3 Specification of manufacturing know-how

The specification of manufacturing know-how is comparatively more complicated and, as already indicated earlier, cannot economically cover every detail. Nevertheless, the following specification is considered to be fairly comprehensive.

(4) Two complete sets of up-to-date layouts of all operations performed by the licensor in his works during the manufacture and assembly of all component parts of the machine, their standard and special equipment, containing all operation times, details and know-how for the economic production of these components.

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[1] This observation is particularly important in the event of an intermediate language. If, for example, know-how were being transferred from Germany to Japan, with English specified as the intermediate language, the dual-translation would almost inevitably create misunderstandings and mistakes.

[2] The most comprehensive literature on this subject may be obtained from the Indian Standards Institution, New Delhi. India has recently changed from the original foot-pound system to the metric system and in the course of this change many conversions became necessary and were made along the lines of this documentation.

(5) One complete set of up-to-date, correct and legibly reproducible drawings of all manufacturing aids - e.g. jigs, fixtures, dies moulds, special tools and special gauges - used by the licensor for the manufacture, assembly, inspection and testing of all components parts of the machine and its standard and special equipment.

(6) One complete set of up-to-date, correct and legibly reproducible assembly drawings, together with one set of white prints thereof, two sets of assembly instructions for the machine, its standard and special equipment, giving all tolerances for final adjustment during assembly.

(7) One complete set of up-to-date, correct and legibly reproducible casting drawings for all cast component parts of the machine and its standard and special equipment.

(8) One complete set of white prints of all casting drawings mentioned in (7) above, containing clear pattern manufacturing data such as parting lines, positions and sizes of core prints and chills, and machine allowances.

(9) Two sets of photographs, one positive and one negative, of all major cast components, showing the open moulds without cores, the open moulds with cores in position and the castings cleaned but with all runners, risers and gates still in position.

The same comments made earlier in regard to the quality and completeness of drawings, as well as to the language and system of measurements to be applied in the transfer of design know-how, would also be valid for the transfer of manufacturing know-how. In addition, the following observations are considered to be important for the comprehensive and smooth transfer of manufacturing know-how.

Operation layouts

The principal documents are the operation layouts as specified under (4) above. They should contain complete information about the machines, jigs, fixtures, dies, moulds, standard and special tools and gauges as well as all other manufacturing aids used by the licensor in the manufacture of each individual component. Such operation

layouts are usually available with the licensor either in the form of a card-index, or more frequently in the form of master schedules to be selectively duplicated as actual working papers required in the internal organization, ranging from material requisitions to individual wage accounts. Lack of space on the various working papers often necessitates the use of symbols in the master schedules, for which a comprehensive key or glossary must be provided by the licensor for decoding and explaining the symbols.

Intermediate dimensions

An important information to be contained in the operation layouts are intermediate manufacturing dimensions and tolerances, indicating the machining allowances for subsequent operations, such as finish-machining after rough-machining of castings, or grinding after heat treatment of steel components. These intermediate dimensions cannot be entered into the drawings of the components as specified under (1), above, which give only the final dimensions and tolerances. Most operation layouts contain also optimum speeds and feeds to be applied by the machine operators in the shops, since machining times for piece rate payment are based on these data.

Operation times

The operation times to be contained in the layouts constitute sometimes a major point of dispute in licensing negotiations. The setting, machining and fitting times, usually provided as standard times in foreign factories as the basis for the piece rate system, are considered to be a trade secret and many licensors are reluctant to reveal them. Nevertheless, the licensee would find these timings most valuable, when comparing the efficiency of his own labour with that of foreign workers. The foreign standard times could also be used as the basis for a monthly productivity bonus, by setting them against the actual time taken by his workers. If at all possible, therefore, he should insist on obtaining detailed standard times for the individual operations as they are performed at the licensor's works.

Drawings of manufacturing aids

The drawings of many of the manufacturing aids specified under

(5) above, may not be directly usable by the licensee. In fact, many of these tools and aids will have to be adapted to his machines, for the latter are only rarely identical with the licensor's machines. Moreover, many operations, or even whole processes, may have to be completely altered because of the differences in manufacturing equipment or the non-availability of special machines. However, a fair number of the drawings as used by the licensor will be very helpful in the designing of new tools and aids for the licensee's own operations and processes. But the quality of these drawings must not necessarily be the same as that of the component drawings specified under (1) above. If, for example, the licensor had only pencil tracings available for his jigs and fixtures, new drawings to be made in ink for the licensee would then be at the latter's expense, and this might not be worth the cost.

Assembly drawings and tolerances

Similarly, the special assembly drawings specified under (6) above, may not be readily available with the licensor. Here, again, it would be a question of economy, whether to insist on them or not. If the assembly instructions and schedules provide a sufficiently clear enough impression of the know-how involved, then special assembly drawings may not be necessary. But it is most essential that the licensee should know all about admissible limits for intermediate and final adjustments, to be made during assembly; if assembly drawings are not available, then these limits and their tolerances will have to be communicated separately.

Specification of foundry know-how

Two different methods have been specified under (7), (8) and (9) for the transfer of foundry know-how, i.e. by means of casting drawings as well as photographs. If special casting drawings are not available, copies of drawings of machined cast components as specified under (1) above, may be used, with machining allowances and pattern manufacturing data entered separately on each of them. Occasionally special pattern drawings will be available with the licensor; these may then replace the casting drawings specified under (7) and (8) above. The photographs specified under (9) have proved very useful in praxis for communicating

the casting methods used in foreign foundries; in particular, know-how regarding locations and dimensions of runners, risers, gates and chills can be very economically conveyed this way.

Material and treatment specifications

Finally, one set of documents is still required to complete the know-how, i.e. a list of materials and their treatment; these belong partly to design, but also to manufacturing know-how. Their specification is suggested as follows:

(10) One complete and up-to-date list together with complete specifications, of all raw materials required for the component parts of the machine and its standard and special equipment, as well as procedures and prescriptions for the heat treatment of all ferrous materials used by the licensor in his works.

This specification would not cover the treatment of non-ferrous material, but these might be included in the operation layouts, wherever applicable. Similarly, details of plating and painting operations, as well as specifications of requisite auxiliary materials, might be either included in the operation layouts or specified separately.

Accuracy standards

In regard to testing methods and accuracy standards for machine tools, no separate specification will be necessary, since they are laid down in ISO standards. But it should be noted that the limits mentioned therein are maximum deviations which are usually surpassed by substantially better results. Therefore, the licensee would be well advised to ask for the average actual measurements achieved by the licensor. In any case, detailed test methods and desirable test results in regard to accuracy, performance and efficiency must be specified for other industrial products, for which general standards have not been established and published.

Additional know-how

The extent to which a licensor is bound to pass on information

regarding later amendments of design or improvements of manufacturing technique that may take place during the course of the agreement is sometimes disputed. Unless otherwise specified, the licensee is not entitled to such information, because he will normally have bought the know-how as and to the extent available at the time of concluding the agreement. Any general specification regarding the supply of future additional know-how is normally of little avail, since the licensor may easily evade the issue by claiming that it concerns a new product line. If the agreement shall provide for a continuous exchange of know-how, it is essential to include a corresponding clause in the contract.

2.4. Limitations of know-how specification

However, as explained earlier, it is not economically feasible to transfer in documentary form all the manufacturing know-how that may be required by the licensee. The specifications under (1) - (10), above, are quite comprehensive and the licensor may have to charge a substantial fee for compiling information, which he cannot readily produce from his records. Thus the licensee will have to decide in some cases which is the more economic to insist on receiving the information or to manage without it.

Further, it should be fully understood that the above-mentioned specifications of documentation for the smooth and comprehensive transfer of design and manufacturing know-ho do not imply any criteria regarding the quality or suitability of the products themselves to be manufactured under the licensing agreement; their selection in regard to economy and feasibility of manufacture, as well as to suitability for the licensee's market, will be entirely independent of these specifications.

3) Examination of licensing documents

The numerous licensing documents specified in chapter (2) are usually handed over to the licensee's authorized delegate who is supposed to sign a receipt acknowledging their completeness. On presentation of this receipt a major instalment, or even the whole lump-sum agreed upon, may be due for payment. Thus the delegate has the onerous task of checking the entire documentation pertaining to a compli-

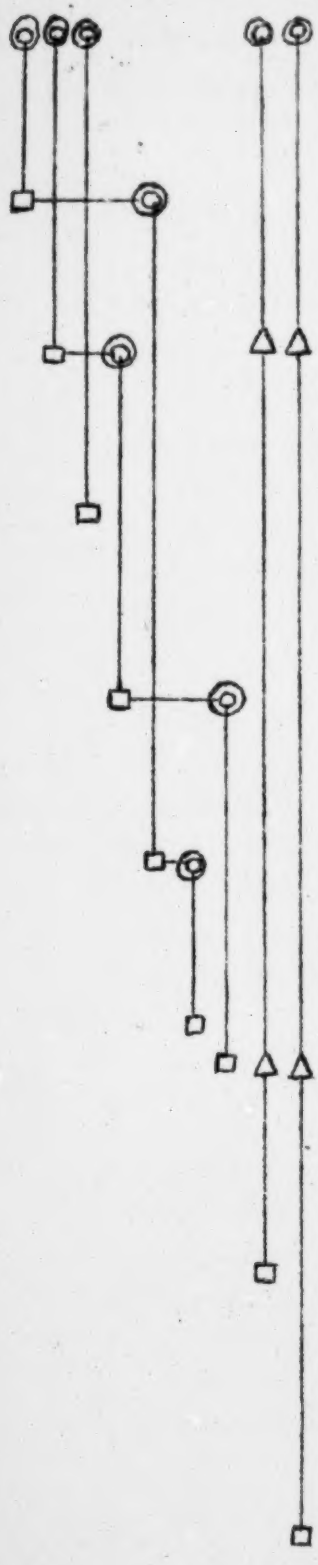
cated machine tool or a similar major industrial product, which is not a minor task.

The check-list below indicates various possibilities of a systematic approach to the important question of a comprehensive cross-examination of the documents. Beginning with the lists of parts as a basis, the principal documents - such as component drawings and operation layouts - are compared one against the other; thereafter, the principal documents are used to check the completeness of the relevant auxiliary documents. The check-list is self-explanatory and provides all significant cross-references; it will be equally useful to the licensor, for compiling the documentation.

It is hardly feasible for the delegate to check the correctness of the numerous documents. Only later, during the practical application of the design and manufacturing know-how at the licensee's works will any mistakes or errors come to light. Any attempt to examine the documents in this respect at the take-over stage would be impractical and, almost certainly, imperfect.

○ Primary basic documents
△ Secondary basic documents
□ Items to be checked

CHECK-LIST FOR LICENSING DOCUMENTS



Description of papers	Documents to be received
List of parts - Standard machine - Accessories - Electro-parts - Service tools	Originals - 1 set Prints - 1 set Summary of lists of parts Code of parts' numbering Code of drawings' numbering
Assembly drawings - Standard machine - Accessories - Electro assemblies	Originals - 1 set Prints - 1 set Summary list of assembly drawings Wiring diagrams
Component drawings - Standard machine - Accessories - Electro-parts - Service tools	Originals - 1 set Prints - 1 set Catalogues, price lists, specifications, standards
Casting and/or pattern drawings - Standard machine - Accessories	Originals - 1 set Prints - 1 set Photographs of major castings in process, positives and negatives 1 set each
Operation layouts - Standard machine - Accessories - Standard parts made by licensor	Prints - 2 sets, with timings Photographs of semi-finished components
Assembly instructions - Standard machine - Accessories	Prints - 2 sets Photographs of assembly in process + alignment testing Alignment + accuracy standards
Assembly schedules	Prints - 2 sets, with timings
Drawings of manufacturing aids for - Fabrication - Assembly - Testing + Inspection	Originals - 1 set Prints - 1 set List of manufacturing aids Photographs of manufacturing aids in use
Standards - Licensor's own works standards - ISO standards - National standards - Suppliers' standards - Alignment + testing standards	Original - 1 set Prints - 1 set Prints - 1 set Catalogues, suppliers' leaflets, price lists Accuracy + time standards
Material specifications - Standard machine - Accessories - Manufacturing aids	Prints - 2 sets List of materials List of suppliers Standard equivalents

4) Remuneration of foreign know-how

4.1. Design and manufacturing know-how as well as organizational experience are valuable assets for which the licensor expects to be duly remunerated when he systematically passes them on to a new licensee for the latter's exclusive use. On the other hand licensees in developing countries are usually not prepared to pay much for know-how, the value of which may be generally appreciated, but only hesitantly acknowledged when it comes to paying for it. Moreover, new companies in such countries often cannot spare much cash for know-how during their early stages.

4.2 Pros and cons of royalty payment

Two of the fundamental points to be decided are the size and the kind of compensation for the know-how to be acquired in a licensing agreement. There are two types of remuneration which are often applied; one is a fixed lumpsum payment upon transfer of the know-how and/or specified instalments at stipulated dates thereafter; the other is a proportionate licence fee or royalty, representing a percentage of the value of the products manufactured and sold under the licensing agreement and usually payable after the sales have been effected. The licensee often prefers the latter type of payment, mainly because it involves less disbursement during the financially stringent establishing period of his new undertaking. He will probably also assume that it will induce the licensor to give him continued assistance in achieving satisfactory production and sales at an early date. Nevertheless, these assumptions often contain pitfalls.

As payment in the form of royalties constitutes an income for the licensor in the licensee's country, it will be taxable, a fact which, surprisingly, is often overlooked. It could even be taxed twice, once in the licensee's country and again in the licensor's. The usually more experienced licensor tries to avoid these pitfalls by specifying in the agreement royalties 'free of taxes' but this stipulation, if accepted, could have considerable consequences for the licensee: he will have to pay the licensor's income tax on the gross amount; if for example a net rate of 3 per cent 'free of taxes' is agreed upon and the tax rate in his country's progressive income-tax scale amounts to 50 per cent, the licensee will have to pay not merely 3 per cent

plus 50 per cent taxes thereon, but 6 per cent, half of which represents taxes to be paid to his local revenue authorities. Furthermore, under the stipulation 'free of taxes' the licensor will also be entitled to have all taxes in his own country paid on this particular income, since he is to receive 3 per cent net. Assuming that the income will be taxed a further 50 per cent in the licensor's country, the licensee will have to pay altogether 9 or may be even 12 per cent of the sales value[1/], in order to arrive at the 3 per cent net demanded by the licensor.

Moreover, the rates of both taxes may be determined by the licensor's total income in both countries, not only by the income from the particular agreement. If, for example, the licensor has additional income in the licensee's country, e.g. from operations other than those covered by the specific licensing agreement, the tax rate to be applied will depend on his total amount of income, since tax authorities usually do not permit the separation by source. If a steeply progressing rate of taxation is in force, the unfortunate licensee might well have to pay as much as 15 or 20 per cent instead of 3 per cent.

4.3. Advantages of the lump-sum payment

Payment in the form of a lumpsum is normally not considered to be an income for the licensor in the licensee's country; under most tax laws any lump-sum payment will be treated as the financial outcome of a sales and purchase agreement, with know-how traded as commodity. The licensor probably will have to pay taxes on the lump-sum in his country as part of his total income; but he may lighten the impact of such extraordinary income under a progressive tax schedule by agreeing to receive the fixed sum in instalments over several financial years. This

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[1/] Either the net or the gross income may be taxed, depending on the tax regulations in the licensor's country.

method is likely to suit the licensee, who may not be inclined to pay the full lump-sum before any earnings are yielded by the arrangement.[1] As will be seen from these various considerations, payment in the form of a lump-sum, sub-divided in various annual instalments, is as a rule, the most favourable arrangement; whereas royalties are likely to increase the cost of the license products and to decrease the benefits for both partners.

Royalties may involve yet another pitfall for the licensee. Licensors frequently insist on the periodic payment of specified minimum royalties irrespective of actual sales. Usually the amounts are agreed upon in a gradually rising schedule, lesser sales being assumed during the initial years and a constant figure thereafter.[2] If an optimistic licensee, unaware of the delays and obstacles on the road to capacity production and sales, agrees to a too rapid rise in minimum levels, he may well have to pay an unreasonable rate of royalties during the development period, when he can least afford it.

Again, in the event of unexpectedly large sales - due for example to unforseen political or emergency circumstances and not so much to the foreign know-how - the licensor would obtain far more remuneration than justified.

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[1] Sometimes, taxation is dependent on the place of transmittal of the licensing documents; if this occurs in the licensor's country, the amount paid by the licensee at that time may be taxfree in the latter's country. But if the documents are officially handed over in the licensee's country against a lump-sum, income as well as business taxes may be levied there. Usually it is advisable for the documents to be officially taken over at the licensor's place of business and to have this fact duly recorded.

[2] The licensor's main reason for this stipulation is to ensure a minimum return on his know-how. In the event of insufficient utilization of the exclusive manufacturing and selling rights rendered to the licensee, whether through incapability, neglicence or intention, the licensor would suffer a potential loss if no minimum royalties were fixed in advance.

In either case payment in lump-sum instalments would be preferable for the licensee, and the licensor would still obtain the compensation which he had considered equitable when concluding the agreement.

Royalty payments often involve an element of gambling, the odds of which would be even for both parties if no minimum royalties were involved But with the one-sided stipulation of minimum levels, the laws of probability preclude substantial gains for the licensee and, as a rule, he will be the loser

It is certainly possible to ensure the same financial net value for the licensor by combining the tow forms of compensation, i.e. an initial lump-sum plus subsequent royalties. He may even prefer such a combination, for his expenditure on travelling, negotiations and the special services required for preparing the documentation could be covered by the lump-sum. On the other hand, the royalties expected to accrue from the agreement will be taxable and for this reason lump-sum payment by instalments will probably be more advantageous for both partners.[1/]

If a licensee sometimes prefers to pay royalties, it is mainly because of an assumed 'community of interest' in the quality of the know-how to be passed on, or in the continuity of advice to be rendered. He probably considers that, if the documents to be obtained under the agreement should be incomplete or incorrect, or the manufacturing know-how inadequate, he will have a better hold on the licensor, whereas once a lump-sum has been paid, or fixed instalments have been irrevocably agreed upon, the licensor may be less inclined to render any further advice or assistance However, this assumed security is illusory since royalties also fall due at specified intervals; a refusal, not to pay the percentage agreed upon would not be tenable, legally

The best guarantee of continued assistance is for the two parties to mutually agree that a percentage of the lump-sum or of the initial instalment should be withheld for a period of one year; this will provide ample time for the licensee to point out any defects and deficiencies in the documents, and for the licensor to make the necessary

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1/ It should go without saying that royalties certainly are due only on those parts of the products which are made by the licensee. The value of any sub-assemblies, components, purchased or standard parts supplied by the licensor must be deducted; when calculating the royalty payable on effected sales of licence products. However, as a rule, those components procured by the licensee himself, independent of the licensor, are to be taken into account.

amendments or additions.

If royalty payments have been agreed upon, the licensor has hardly any control over the actual sales materializing from the agreement. Therefore, it is frequently stipulated that a neutral person, such as a chartered accountant, will inspect the licensee's books at regular intervals in order to assess the amount to be paid. The effect of this control may be as negative, as the licensee's dislike for the instrument itself. Here again, mutually agreed instalments would appear to be the more appropriate solution.

4.4. Capitalization of know-how

Another method of compensation occasionally applied, is to capitalize the value of the know-how by investing it in the new undertaking; payment is then arranged either by way of equity in the form of common or preferred stock issued to the licensor, or in the form of debentures or bonds bearing fixed interest. Bonds and debentures may be made convertible for later optional exchange into stock. The earnings from such stock or bonds, however, are usually taxable in the licensee's as well as in the licensor's country.[1/] Nevertheless, the advantages of capitalization can be manifold for both partners, particularly if convertible bonds are used as instrument of payment. Whereas common stock or even preferred stock might not yield very much during the first year of a new undertaking, the licensor would receive a guaranteed minimum return on bonds during this period. Later, after the new company was firmly established and dividends on common stock exceeded the fixed return on bonds, the licensor might exchange them for common stock; he would then benefit from increased earnings as well as from the growing value of his contribution in the form of know-how.

1/ Dividends on equity are taxfree in many developing countries, owing to the promotional privileges granted to new undertakings; also tax holidays or reduced taxes are often granted to new undertakings and particularly to foreign investors, mainly for capital participation. Earnings (interest) from bonds or debentures are occasionally also exempted from income and other taxes in foreign countries.

But the capitalization of know-how is usually only practicable if the licensor simultaneously contributes in other forms to the new undertaking, for example, by participating in the equity, or by providing a major portion of the debt finances, say, in the form of capital equipment under deferred payment over a long period. Such major participation will sometimes induce the licensor to agree to contribute know-how against a token payment only, as he will be equally interested in avoiding the over-valuation of know-how in a joint venture in which he is a partner or a financer.[1/]

For the licensee, the advantages of capitalizing know-how in the form of common stock are obvious. Burdensome cash payments will be avoided before and during the new venture's gestation period when finances are scarce, and he will only have to pay dividends on equity, the earnings of the company permitting. Whereas royalties are based entirely on turnover and must be paid even when sales are not yielding any profits, dividends depend mainly on the company's earnings and are thus more easily paid. Even if the directors decide to re-invest the earnings and not to pay dividends, the licensor's securities will probably gain in value. A further advantage is that, as a partner the licensor is genuinely interested in the profitability of the undertaking and will do his utmost to provide the required quality of know-how and advice in order to ensure optimum earnings. Capitalization of the know-how in the form of equity is the surest way to secure optimum collaboration in a licensing agreement.

The potential benefits arising for the licensor are less obvious; the mere provision of know-ho will normally not permit the measure of minimum control which is essential to safeguard his rights. However, in the event of a joint venture, involving additional investment by

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1/ The two fundamental postulates in attracting a foreign licensor to participate in the equity of a licensee's undertaking are honest accounting and open books. Lack of legislation or imperfect control, including the occasional habit of a second set of books for tax purposes, makes capital participation unattractive and impracticable.

the licensor, payment for know-how in the form of stock or bonds is an approved method; such an arrangement will definitely be to the mutual advantage of both partners. The main advantage is that the value of the know-how will increase with the anticipated rapid growth of the new undertaking. This consideration is likely to have special appeal for the licensor if the know-how brought in by him is in any case being superseded at his own works by more advanced designs and methods. The full re-utilization of such retiring know-how in a developing country, promising rewards similar to those formerly experienced at home, will certainly present considerable attraction.

4.5 Compensation through guaranteed purchases

Yet another method of providing compensation for know-how is the licensee's guaranteed purchase of products, components, material and/or standard parts to be supplied by the licensor, under a special contract or as stipulated in the licensing agreement. The profits from these supplies are considered to form part of the payment for the know-how. Various arrangements are known to have been successfully made for this purpose. Frequently, prudent entrepreneurs in developing countries prefer to commence the domestic manufacture of sophisticated engineering products by backward integration. Starting with the assembly of imported components and only gradually taking up the manufacture of, initially, simpler parts, they carefully develop the necessary skill and technology for the economic production of more complicated components. Or, in a different approach, they first select those components for economic domestic manufacture which are most suited to the circumstances, such as labour-intensive parts to be made by low-wage workers; or because certain primary materials are available in the country at low cost; or some special skills have already been developed by traditional trades; or again, because certain ancillary industries have already been established in connexion with other products. In any event, such gradual commencement of a new production usually permits foreign licensors to supply substantial quantities of more intricate and, therefore, valuable components over considerable periods. These supplies naturally entail profits for the licensor, especially if he is also appointed as the licensee's purchasing agent for standard parts made at low cost by specialized manufacturers, or for special parts, such as electric instruments or high-pressure pumps. The profits

accruing from these supplies should be taken into account when negotiating a licensing agreement, since they often constitute a substantial benefit. It would be unfair toward the licensee to consider such supplies over fairly long periods as a kind of extended trade, beyond and apart from the licensing agreement, as they are usually only feasible in connexion with or as a consequence of the agreement.[1/]

It is more difficult to evaluate the potential profits which the licensor might possibly gain from exporting increasing quantities of his non-licensed products and having them traded with the help of the licensee, once the latter's sales organization has become established. This potential benefit should normally be considered as a bonus to be shared, since it provides benefits for both parties. But potential import of non-licenced products, which often will be possible only with the licensee's help, frequently constitutes a substantial attraction, a point which can well be brought out in licensing negotiations. Many minor assembly operations in developing countries have been established by foreign licensors merely to keep a foot in the door and to ensure continued import of their products.

Sometimes a licensee in an industrially developing country may acquire foreign know-how for his new undertaking completely free of charge, provided he guarantees a minimum sale in his country of the licensor's products. For example, the licensor may realize that further exports of some of his standard products into the licensee's country will no longer be possible, owing to the introduction there of import quotas or increased import duties, designed to protect the newly established domestic manufacture. In these circumstances, he may well be interested in retaining at least part of the market for some time.

1/ A delicate subject in licensing negotiations is the advance stipulation of prices to be charged by the licensor for future supplies, particularly for proprietary or patent-protected items not procurable elsewhere. The standard solution to this problem is a comprehensive price-list of parts, to be provided with the licensing documentation. Any major deviation would then call for a full explanation.

By supplying initially complete CKD-[1]- packs or sub-assemblies, and afterwards certain intricate components to complement domestic production, he could possibly do better business than his previous imports of complete products had been in the face of fierce competition with many others. Moreover, the undertaking now licensed to manufacture some of his standard products may well be used as a vehicle to import and distribute other, non-licensed and less protected products of his make. Particularly, if original trade connexions develop into such domestic licence manufacture in an industrially developing country, an agreement along these lines serves more or less as a natural continuation of previous trading [2]

Occasionally, foreign manufacturers supply free know-how plus manufacturing and selling rights of one specific product as bonus for guaranteed minimum sales of their other, non-licensed products in a developing country A common method of ensuring minimum purchases by the licensee within stipulated periods is to impose a proportional penalty, if orders fall short of the agreed value. Alternatively, a lump-sum equal to the value of the know-how is stipulated in principle, against which a specified percentage of the actual purchases will be credited, after supplies have been effected and payment has been received by the licensor

The licensor's main advantage arising from this method of compensation is the occurence that the relevant revenue is normally free of income tax in the licensee's country and also that it is not taxable as extraordinary income in his own country. For the licensee, it has the added advantage of a reliable source of supply, in regard mainly to adequate quality, but also in regard to delivery, credit and an understanding of his needs.

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[1] CKD = completely knocked down

[2] Reputable machine tool manufacturers have been known to surrender, free of charge, the entire design and manufacturing know-how of some of their standard machines against a licensee's guarantee to buy, within three years, components equivalent to about fifty complete machines. Previously they had sold about ten machines per year, and they could foresee that this share would disappear altogether, if they allowed domestic production to be established with the aid of a competitor. They decided, therefore, to secure the remaining share of the market for themselves in offering their know-how free of charge, and were thus able to further import components the value of which exceeded the previous annual average. In addition they enjoyed the support of their licensee's growing organization in the sale of other non-licensed, special machines

4.6 Community of interests arising from various compensation methods

A brief comparison of a possible community of interests may be helpful in assessing the pros and cons of the various forms of compensation

If a mere royalty payment is agreed upon, withouth any fixed lump-sum or purchase of components, the licensor's main aim will be maximum sales, not optimum earnings at the licensee's undertaking This is only natural, since royalties will increase with growing sales, whereas higher profits may discourage additional sales Similarly, if the licensor can sell substantial amounts of components, he will certainly not be too keen to advise the licensee on how to make them. Again his predominant target will be maximum sales of the licensed product together with maximum supplies over long periods; his only concern in the success of the licensed undertaking will be to secure payment for his supplies.

If, on the other hand, the licensor is relying on payment by instalments, his interest will mainly extend to the new undertakings sustained capability to pay all subsequent instalments. The same goal probably would be pursued by him in the case of high minimum royalties to be paid in stipulated periods.

Capitalized know-how, repaid with common or preferred stock, is likely to secure maximum co-operation toward optimum earnings for the licensed company, since the value of the shares held by the licensor, as well as the dividends paid thereon, will grow with the earning power The same support will prevail in the case of convertible bonds, but probably in a less speculative and more security-oriented manner Non-convertible bonds, and especially non-convertible unsecured debentures, will induce the licensor to play safe in every respect; his main objective will then be a reasonable earning power to ensure payment of interest

If the licensor's trade name is involved, his concern for optimum quality is likely to override the licensee's desire for rapid initial profits. An appropriate quality of licence products, however, will likely prove to be more profitable for the licensee, too, in the long run.

The foregoing considerations clearly show that the various methods of compensation can give rise to distinct, and sometimes contradictory, trends of interest. Therefore, a combination of the various ways and means of compensation mentioned before is advisable to ensure optimum co-operation. In praxis, however, usually only two or three of them are used in one contract, to reimburse the licensor's expenditure and to pay for the value of the know-how.

4.7 Assessment of know-how value

It goes without saying that the licensor's genuine technical services must be wholly reimbursed with a reasonable margin of profit, and his expenses for compiling the documents and similar activities must be fully refunded. But remuneration for the know-how itself as an asset should be carefully evaluated, before concluding a licensing agreement.

The goodwill or potential value of know-how can often be assessed fairly accurately and expressed in monetary terms. One way of ascertaining the approximate market value is to compare the offers of various competing licensors; another is to estimate the hypothetical development cost of the know-how at the licensee's own design offices and workshops, with the aid of foreign experts and advisors.[1/] A third possibility is to obtain quotations from engineering consultants experienced in this specific field, for the development of new designs and operation layouts. In all these cases, the total estimated net earnings, accruing to the licensor from the proposed agreement, must be balanced against the market value thus assessed. If such earnings are estimated to exceed the approximate market value, more adequate terms and conditions must be negotiated.[2/]

Adequate attention must be paid also to the value of the possible organizational advice to be rendered by the licensor, in addition to the know-how; this component of a licensing agreement can be of utmost importance, as already stressed in the introduction to this paper. Further, the licensor's previous experience, if any, with similar projects in developing countries would be of value not only in ensuring a smooth transfer of the know-how but also in assessing the licensee's likely needs.

Certainly the reputation of the licensor must be fully taken into account, if the licensee is to be permitted to use his trade-name. This

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[1/] + [2/] see following page.

image radiating from a reputable foreign name can be decisive for the acceptance of the licensee's new products in both the domestic and new export markets; it can easily constitute all the difference between an early business success or failure.

Lastly, the foremost qualification of any licensing agreement is mutual confidence. Perfect technical specifications and fool-proof legal provisions cannot make up for lack of faith.

1/ Such an estimate would be of little use for actual implementation, since the experts appointed for this purpose would likely not be in a position to execute the task to the licensee's satisfaction.

2/ The licensor often approaches the problem from the other end, by estimating the licensee's probable sales and the resultant anticipated profits; the gross remuneration is then expected to form a reasonable share of the profits thus estimated.